<u>REMARKS</u>

This is a full and timely response to the outstanding non-final Office Action mailed March 25, 2005. Reconsideration and allowance of the application and pending claims are respectfully requested.

I.   Claim Objections

Claim 9 has been objected to because of an informality. In response to the objection, Applicant has amended claim 9 to replace "is" in line 5 with "if", as suggested by the Examiner.

In view of the above-noted claim amendment, Applicant respectfully submits that claim 9 is not objectionable and respectfully requests that the objection be withdrawn.

II.   Claim Rejections - 35 U.S.C. § 103(a)

A.   Rejection of Claims 1, 2, 4-12, 14-17, and 19-28

Claims 1, 2, 4-12, 14-17, and 19-28 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over <u>Bruckner</u> (U.S. Pat. No. 6,496,346). Applicant respectfully traverses this rejection.

As has been acknowledged by the Court of Appeals for the Federal Circuit, the U.S. Patent and Trademark Office ("USPTO") has the burden under section 103 to establish a *prima facie* case of obviousness by showing some objective teaching in the prior art or generally available knowledge of one of ordinary skill in the art that would lead that individual to the claimed invention. *See In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). The Manual of Patent Examining Procedure (MPEP) section 2143 discusses the requirements of a *prima facie* case for obviousness. That section provides as follows:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teaching. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must be found in the prior art, and not based on applicant's disclosure.

In the present case, the prior art does not teach or suggest all of the claim limitations, and there is no suggestion or motivation in the prior art to modify the reference to include those limitations. Applicant discusses the applied reference and Applicant's claims in the following.

1. The Bruckner Reference

Bruckner discloses a system for automatic shutdown of a "processor-based system." Bruckner describes such a processor-based system 100 in relation to Figure 1. In particular, Bruckner states:

> In FIG. 1, a processor-based system 100 includes a system board 14, such as a motherboard, according to one embodiment. The system board 14 includes a processor 12, and a power supply 16, as may be found in a typical processor-based system. In this context, the term "processor" may generally refer to one or more microprocessors, such as a microcontroller, an X86 microprocessor, a Pentium.RTM. processor, a digital signal processor, as just a few examples. The Pentium.RTM. processor is available from Intel Corporation, of Santa Clara, Calif.
> [Bruckner, column 4, lines 14-23]

Accordingly, Bruckner's system operates to protect a computer's central processor. As is further described by Bruckner:

> The processor 12, upon receiving indication that its internal temperature has exceeded a critical threshold value, may issue a signal 20, labeled in FIG. 1 as THERMTRIP#. The processor 12 may monitor its internal temperature by reading sensors located on the chip or by some other mechanism. The processor 12 may include a pin (not shown) such that the THERMTRIP# signal 20 may be coupled to other circuitry of the system board 14.
>
> The signal 20 may be received by a thermal trip circuit 10, according to one embodiment. The thermal trip circuit 10, upon receiving the THERMTRIP# signal 20, turns off the power supply 16. In this manner, power to the system 100 is disabled.
>
> [Bruckner, column 4, lines 31-44]

Accordingly, Bruckner's system monitors the temperature of the computer's central processor and, if an indication is received that the temperature has exceeded a critical threshold value, turns off power to the central processor.

Notably, Bruckner says nothing about monitoring the temperature of a storage device, or a storage device that comprises its own temperature sensor.

2.   Applicant's Claims

Applicant claims various methods, systems, and other components that facilitate monitoring of the temperature of a computer storage device and controlling of the computer relative to the monitored temperature. Applicant discusses the claims in the following.

(a) Claims 1-10

Independent claim 1 provides as follows (emphasis added):

> 1. A method for cooling a storage device contained in a computer, the method comprising:
>
> *determining the temperature of the storage device*; and
>
> *adjusting computer operation* so as to reduce the temperature of the storage device *if that temperature is deemed to be too high*.

As is noted above, and as is further admitted in the Office Action, Bruckner neither teaches nor suggests monitoring the temperature of a storage device. It follows that Bruckner fails to teach or suggest "determining the temperature of the storage device" or "adjusting computer operation . . . if that temperature is deemed to be too high".

Despite this lack of teachings as to determining the temperature of a storage device, the Office Action argues that it would have been obvious to determine the temperature of a storage device in view of Bruckner's teaching of monitoring the temperature of a computer central processor. As is stated in the Office Action:

> It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the temperature control method of Bruckner for a processor based device within a storage device that contains a processor.
>
> Accordingly, such a modification would have been obvious since Bruckner teaches a processor based storage device such as a hard disk drive may suffer in performance if operated beyond certain temperature conditions (see column 1 line 40-45 & column 2 line 44-47), thereby suggesting the obviousness of the modification.

As to the first paragraph of the Examiner's argument, Applicant notes that the paragraph merely states a conclusion. Specifically, the paragraph generally states that it would have been obvious to apply Bruckner's method to a storage device because Bruckner applies the method to the computer's central processor. Applicant respectfully asserts that this is an unwarranted inference that is not suggested by Bruckner. To the contrary, the only suggestion for such a solution appears to come from Applicant's own specification. As is well established in the law, such hindsight to the Applicant's own disclosure is *per se* improper. *See Crown Operations International, Ltd. v. Solutia, Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002).

Regarding the second paragraph of the Examiner's argument, it appears that the Examiner is asserting that, since Bruckner applies his method to a computer's central processor, it would have been obvious to persons having ordinary skill in the art to apply the method to any device, including a storage device, that includes a controller. Applicant disagrees. As a first matter, a person having ordinary skill in the art would certainly not equate Bruckner's "processor-based system" (i.e., a central processor on a motherboard) with a storage device. Clearly, these are very different components having very different functions. Therefore, a method that is applied to one component would not be obvious to apply to another just because both components are used inside a computer.

Second, a person having ordinary skill in the art would not think to apply Bruckner's method to a storage device simply by virtue of the fact that the storage device includes a controller. As is well known in the art, computer central processors, such as that described by Bruckner, are often used continually at very high operating speeds because they comprise the central "brain" of the computer. In contrast, a storage device controller typically is only responsible for performing reads and writes to a storage medium (e.g., disc) under the command of the computer central processor. Therefore, the duty cycle for such a controller is much less

than that of a central processor and, therefore, far less heat is generated by the controller as compared to the central processor. As is described by Applicant in the specification, it is the heat generated by the moving components of the storage device, such motors that spin the storage media, that generate the heat that is to be monitored in Applicant's method. Regardless, there is simply no motivation provided in the reference to apply Bruckner's method to a storage device.

Third, Applicant notes that, contrary to that implied in the second paragraph above, Bruckner does *not* address the problem of storage device overheating in column 1, lines 40-45, and column 2, lines 44-47. Those excerpts provide as follows:

> Despite these prophylactics, the processor on the motherboard may exceed a desired temperature. Once this threshold has been surpassed, the processor may fail or degrade in performance. Likewise, other ICs as well as non-ICs, such as hard disk drives, may suffer in performance if operated beyond certain temperature thresholds.
> [Bruckner, column 1, lines 40-45]

> Table 1 shows three distinct predetermined temperatures and associated operating system responses, which have been implemented in some prior art systems. Each temperature indicates a processor temperature, although the temperature of other non-processor ICs may be responded to in a similar fashion.
> [Bruckner, column 2, lines 44-47]

Clearly, these passages are silent to *monitoring the temperature* of a "storage device" or the deleterious effects *on a storage device* if its temperature becomes too high.

In view of the above, it is clear that Bruckner does not render claim 1, or its dependents, obvious. Applicant therefore respectfully requests that the rejection be withdrawn.

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(b) Claims 11-15

Regarding claim 11, Bruckner does not teach or suggest "periodically measuring the temperature of the storage device with a temperature sensor provided in or on the storage device" for reasons discussed in the foregoing. Accordingly, Bruckner does not render claim 11, or its dependents, obvious. Applicant therefore respectfully requests that the rejection of those claims be withdrawn.

(c) Claims 16-21

In regard to independent claim 16, Bruckner fails to teach or suggest "means for measuring the temperature of the storage device, the means being directly associated with the storage device" or "means for adjusting operation of the computer in relation to the measured temperature" for reasons discussed in the foregoing. Accordingly, Bruckner does not render claim 16, or its dependents, obvious. Applicant therefore respectfully requests that the rejection of those claims be withdrawn.

(d) Claims 22-25

Regarding independent claim 22, Bruckner does not teach or suggest "logic configured to read a temperature of a storage device" or "logic configured to receive the read temperature and to control operation of a computer relative to the read temperature" for reasons discussed in the foregoing. Accordingly, Bruckner does not render claim 22, or its dependents, obvious. Applicant therefore respectfully requests that the rejection of those claims be withdrawn.

(e) Claim 26

With respect to independent claim 26, Bruckner fails to teach or suggest "logic configured to command a storage device driver to periodically collect temperature data from a

storage device" or "logic configured to provide the collected temperature data to a computer basic input/output system (BIOS) to enable the BIOS to control operation of the computer in a manner so as to cool the storage device" for reasons discussed in the foregoing. Accordingly, Bruckner does not render claim 26 obvious. Applicant therefore respectfully requests that the rejection of claim 26 be withdrawn.

(f)   Claims 27-28

Regarding independent claim 27, Bruckner fails to teach or suggest "logic configured to receive a temperature of a storage device measured by the storage device" or "logic configured to control operation of a computer in which the storage device is provided in a manner that reduces the temperature of the storage device" for reasons discussed in the foregoing. Accordingly, Bruckner does not render claim 27, or its dependents, obvious. Applicant therefore respectfully requests that the rejection be withdrawn.

3.   Conclusion

In summary, it is Applicant's position that a *prima facie* for obviousness has not been made against Applicant's claims. Therefore, it is respectfully submitted that each of these claims is patentable over Bruckner and that the rejection of these claims should be withdrawn.

B.   Rejection of Claims 3, 13, and 18

Claims 3, 13, and 18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Bruckner, as applied to claims 1, 11, and 17, in view of Meehan, et al. ("Meehan," U.S. Pat. No. 6,169,442). Applicant respectfully traverses this rejection.

As is identified above, Bruckner at least does not teach monitoring a storage device temperature. In that Meehan does not remedy this deficiency of the Bruckner reference,
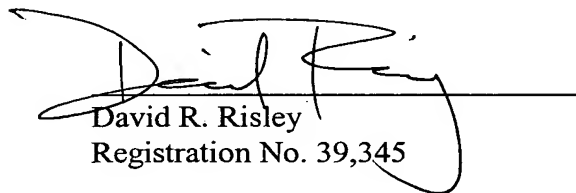
Applicant respectfully submits that claims 3, 13, and 18 are allowable over the Bruckner/Meehan combination for at least the same reasons that claims 1, 11, and 16 are allowable over Bruckner.
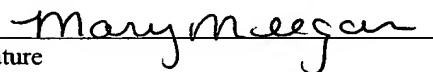
CONCLUSION

Applicant respectfully submits that Applicant's pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,

David R. Risley
Registration No. 39,345

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to: Assistant Commissioner for Patents, Alexandria, Virginia 22313-1450, on

6-1-05 .

Mary Meegan
Signature